

507,284

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 September 2003 (25.09.2003)

PCT

(10) International Publication Number  
**WO 03/078552 A2**

- (51) International Patent Classification<sup>7</sup>: **C10L 1/14**, C. [US/US]; 14351 Chagrin Woods Drive, Newbury, OH 10/02, 10/04 44065 (US).
- (21) International Application Number: PCT/US03/07573 (74) Agent: **MUNSON, Jeffrey, E.**; The Lubrizol Corporation, 29400 Lakeland Boulevard, Wickliffe, OH 44092-2298 (US).
- (22) International Filing Date: 13 March 2003 (13.03.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
- |            |                               |    |
|------------|-------------------------------|----|
| 60/364,256 | 14 March 2002 (14.03.2002)    | US |
| 60/418,935 | 16 October 2002 (16.10.2002)  | US |
| 60/426,199 | 14 November 2002 (14.11.2002) | US |
- (71) Applicant (for all designated States except US): **THE LUBRIZOL CORPORATION** [US/US]; 29400 Lakeland Boulevard, Wickliffe, OH 44092-2298 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **DALY, Daniel, T.** [US/US]; 33166 Popham Lane, Solon, OH 44139 (US). **JACKSON, Mitchell, M.** [US/US]; 323 Whitetail Drive, Chagrin Falls, OH 44022 (US). **CORKWELL, Keith**,
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).
- Published:**
- without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **ETHANOL-DIESEL FUEL COMPOSITION AND METHODS THEREOF**

(57) Abstract: A fuel composition of the present invention comprises (a) a diesel fuel, (b) ethanol, (c) a surfactant, and optionally (d) a combustion improver. Methods employ the fuel composition of the present invention to provide a stable fuel composition, to improve lubricity of a fuel composition and to reduce exhaust emissions of a compression-ignited internal combustion engine.

WO 03/078552 A2